ECOLOGICAL SUCCESSION OF PLANTS AND ANIMALS

Shelford (Biol. Bull., Dec., 1911) concludes a series of papers dealing with the biological succession in ponds at the head of Lake Michigan. The following are some of the conclusions reached by the author as the result of this series of interesting studies:

1. The quantity of bacteria, plankton, vegetation, and large animals increases with the age of the pond.

2. Terrigenous bottom and oxygen content decrease with the age of the pond.

3. Fish tend to adapt themselves to the type of food rather than to become distributed or furnish successions in accordance with the type of food. They are not necessarily most abundant where food is greatest.

4. Small oxygen content of older ponds will account for absence of fish from them.

5. Conditions outside the breeding season are probably less important than those of this season in determining the success of fish.

6. The conditions most favorable to the normal feeding of fish are not only different from those most favorable to breeding, but are even antagonistic; and the former tend to encroach on the latter. ment, and the preservation of balance between the breeding conditions and the adult life-conditions.

7. Animal succession in ponds is due to an unused increment of excretory and decomposition products which causes increase in vegetation; a decrease in oxygen at the bottom; and a general change in the conditions affecting breeding.

8. Succession of particular species, rather than the continued dominance of some when they once become dominant, results from the inflexibility of their standards of demands in accordance with the changing conditions.

CHROMATIC REDUCTION IN CELL DEVELOPMENT

Rohde (Zeit. Wiss. Zool., 1911) undertakes to show that a marked characteristic of the differentiation and maturing of cells is the reduction of chromatin of the nucleus. He suggests, as illustrative of this, a series with bacteria at one end and the red blood-cells of mammals at the other. The bacteria he considers as prac-

tically all nucleus. The corpuscles on the other hand have lost their nuclei wholly. Between these extremes we have various stages of chromatin reduction in the development of the specialized Metazoan tissues. The maturation divisions in ova and sperm, the bodily extrusion of chromatin observed on the part of blood-cells, etc., he regards as illustrations of the process.

THE RESERVE OF FOOD IN TREES

Preston and Phillips (Forest Quart., 1911) agree with the common view that starch is the principal form in which reserve food is stored in trees. They doubt that cellulose is able to act at all as a reserve material. The maximum contained reserve for deciduous trees occurs about the time the leaves fall, and during the next few weeks there is a decided reduction in its amount. The sugar content in trees remains pretty constant except for an increase in spring during the unfolding of the buds.

ALTERNATION OF GENERATION IN FLORIDEÆ

Lewis (Bot. Gaz., Mch., 1912), by artificial plantings of tetraspores and carpospores of *Polysiphonia* and some other genera of red algae gets experimental results supporting the general conclusion that tetraspores produce only the sexual plants and carpospores only the tetrasporic plants. In no instance was an exception found to the rule, although a considerable number of plantings developed to maturity. Tetraspores from a given individual produced male and female plants in approximately equal numbers. It is also concluded that no greater growth vigor comes to the carpospores over the tetraspores because of the double number of chromosomes contained by them.

RELATION OF THE PROTOPLASM OF ADJACENT PROTOPLASTS

Thoday (Ann. Bot., 1911) undertakes to throw light on the relation that exists between protoplasms of contiguous cells, by an examination of the relation between the parasite, *Cuscuta,* and its host. She finds that there is no direct protoplasmic connection between the cells of *Cuscuta* and the host, but that the phloem cells of the parasite haustoria apply themselves to the sieve plates of the phloem of